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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,440	04/19/2006	Daisuke Itoh	WAKAB81.003/APC	9670
20995	7590	07/22/2011	EXAMINER	
KNOBBE MARLENS OLSON & BEAR LLP			ZHUI, WEIPING	
2040 MAIN STREET			ART UNIT	PAPER NUMBER
FOURTEENTH FLOOR				
IRVINE, CA 92614			1734	
NOTIFICATION DATE		DELIVERY MODE		
07/22/2011		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/595,440	<b>Applicant(s)</b> ITOH ET AL.
	<b>Examiner</b> WEIPING ZHU	<b>Art Unit</b> 1734

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 03 May 2011.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-18,20-22 and 24-39 is/are pending in the application.
- 4a) Of the above claim(s) 3-14,16-18,20-22,24-28,30-34 and 36-39 is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,15,29 and 35 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date: \_\_\_\_\_
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Status of Claims***

1. Claims 1, 2, 15, 29 and 35 are currently under examination, wherein claims 1, 15, 29 and 35 have been amended and claim 35 has been rejoined in applicant's amendment filed on May 3<sup>rd</sup>, 2011. Claim 35 has been withdrawn inadvertently in applicant's amendment filed on April 13, 2010. The withdrawn claims 3, 5, 7, 9, 11, 13, 14, 16, 20, 21, 25, 27, 30-34 and 36-39 have also been amended in the same amendment.

***Status of Previous Rejections***

2. The previous rejections of claims 1, 2, 15 and 29 under 35 U.S.C. 103(a) as stated in the Office action dated February 3<sup>rd</sup>, 2011 are maintained as follows:

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 15, 29 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2002-334618 A.

With respect to claims 1, 2, 15, 29 and 35, JP ('618 A) discloses (paragraphs [0016]-[0018]) a fine metal particle comprising gold, silver and copper in the form of a dry powder free from any solvent having a preferred average particle size of 2 to 10

nm (paragraph [0022]), wherein the surface of the particle is covered with one or more compounds containing a nitrogen, an oxygen or a sulfur atom, wherein the compounds comprise alkylamines (e.g. diamine compounds having an alkyl substituent on one of two amino group) a having a boiling point of less than 250 °C (paragraphs [0024]-[0028]), which would read on the compounds as claimed in the instant claims 1 and 29, or carboxylic acids capable of forming metal salts of the carboxylic acids via a reaction with the metal in the fine metal particles, wherein the carboxylic acids comprise the straight chain or the branched saturated carboxylic acids having 1-10 carbon atoms as claimed in the instant claims 15 and 35 (paragraphs [0030]-[0032]). JP ('618 A) discloses that the surfaces of the fine metal particles in a dispersion are covered with a coating of the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom (claim 5); and the solvent in the dispersion is evaporated by a heat treatment at a temperature lower than 250°C (abstract). It would have been obvious to one of ordinary skill in the art to evaporate the solvent in the dispersion by a heat treatment at a temperature lower than 250°C to obtain dry fine metal particles free from any solvent and covered with the coatings of the compounds or carboxylic acids as desired. The particle size range of the metal particle, the carbon numbers of the carboxylic acids and the boiling points of the compounds of JP ('618 A) overlap the claimed ranges respectively. Therefore, a prima facie case of obviousness exists between the prior art and these aspects of the claimed invention. See MPEP 2144.05 I.

JP ('618 A) does not specify the content range of the compounds or carboxylic acids as claimed in the instant claims 1 and 15. However, JP ('618 A) discloses that the content range of the solvent is from 5 to 100 parts based on 100 parts by mass of the fine metal particles (paragraph [0036]) and that the content of the organic solvent is determined by the content of the carboxylic acids which in turn is determined by the content of the compounds (paragraphs [0036] and [0030]) indicating that the contents of the carboxylic acids and the compounds are directly related to the content of the solvent. Therefore, the content range of the solvent of 5-100% as disclosed by JP ('618 A) would read on the claimed carboxylic acid and compound content ranges of 5 to 35%.

JP ('618 A) does not specify a boiling point of 100°C or lower for the solvent as claimed in the instant claims 1 and 15. However, JP ('618 A) discloses that the boiling point of a nonpolar or low polar solvent should be greater than the room temperature and lower than the sintering temperature (paragraph [0035]), which would overlap the claimed temperature range. JP ('618 A) does not specify the polar solvents as claimed in the instant claims 1 and 15. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed solvents with an expectation of success because the lower polar solvent disclosed by JP ('618 A) would read on the instantly claimed polar solvents without any limitations on the polarity. Furthermore, the claimed feature of the polar solvents appears to be a process limitation in product-by-process claims because the polar solvents would

not be included in the claimed product. See the ground of rejections of the claimed treatment limitations in instant claims 1 and 15 below.

JP ('618 A) does not specify the thickness of the covering layer as claimed in the instant claims 1 and 15. However, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. *In re Boesch*, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the thickness is a result effective variable, because it would directly affect the final properties of the particles as disclosed by JP ('618 A) (paragraphs [0023] and [0024]). Therefore it would have been obvious to one skilled in the art to have optimized the thickness of the covering layer on the particles of JP ('618 A) in order to achieve the desired properties of the particles. See MPEP 2144.05 II.

The claimed treatment limitations in instant claims 1 and 15 (i.e. the steps of bringing, removing, adding and evaporating) are process limitations in product-by-process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. JP ('618 A) discloses a fine metal particle, which reasonably appears to be only slightly different than the respective claimed product in the product-by-process claims. Therefore, a rejection based on section 103 of the statute is eminently fair and acceptable. See MPEP 2113.

***Response to Arguments***

4. The applicant's arguments filed on May 3<sup>rd</sup>, 2011 have been fully considered but they are not persuasive.

First, the applicant argues that the claimed fine metal particles in the form of a dry powder are by no means in contact with any organic solvents, whereas the fine metal particles of JP ('618 A) are always in contact with an organic solvent. In response, the examiner notes that prior to the instantly claimed evaporation step, the instantly claimed fine metal particles are also in contact with a solvent as the fine metal particles of JP ('618 A). After evaporating all the solvent in the heat treatment at a desired temperature, the fine metal particles in contact with the solvent of JP ('618 A) would become fine metal particles in the form of a dry power free from any solvent as instantly claimed.

Second, the applicant argues that JP ('618 A) fails to suggest that the metal salt of carboxylic acid would be used as a compound for coating on the surface of the fine metal particles and the coated fine metal particles would be successfully dispersed in an organic solvent. In response, the examiner notes that the metal salt of carboxylic acid as a reaction product of the carboxylic acid added to the dispersion and the metal in the fine metal particles dispersed in an organic solvent would obviously remain as a layer or coating on the fine metal particles dispersed in the organic solvent.

Third, the applicant argues that JP ('618 A) fails to suggest any reason for the optimization of the thickness of the covering layer on the claimed fine metal particles. In response, the examiner notes that JP ('618 A) suggests optimizing the thickness of the covering layer on the particles to achieve the desired properties of the particles in terms of reduced agglomeration and improved oxidation resistance. (paragraphs

[0023] and [0024]). Furthermore, it is noted that the thickness of the covering layer on the fine metal particles of JP ('618 A) would also overlap the instantly claimed thickness ranges because both the diameter of the fine metal particles (2 to 10 nm, paragraph [0022]) and the contents of the compounds (e.g. 15% by weight of the fine metal particles, Example 1) or carboxylic acids (e.g. 10% by weight of the fine metal particles, Example 2) disclosed by JP ('618 A) overlap the claimed ranges.

Fourth, the applicant argues that JP ('618 A) only teaches a fine metal particle dispersion used for production of a conductive film, and one having ordinary skill in the art would see no reason to evaporate. In response, the examiner notes that JP ('618 A) discloses heat treating the fine metal particle dispersion at a temperature lower than 250°C (abstract), which would obviously include the evaporation of all the solvent in the dispersion before any detachment of the covering layer from the surface of the fine metal particles.

Fifth, the applicant argues that JP ('618 A) does not disclose the instantly claimed polar solvents. In response, see the reason for the rejection of the claimed feature as discussed above. The claimed feature of the polar solvents appears to be a process limitation in product-by-process claims because the polar solvents would not be included in the instantly claimed product.

#### *Conclusion*

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Emily Le can be reached on 571-272-0903. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1734

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Weiping Zhu/  
Examiner, Art Unit 1734

/Emily M Le/  
Supervisory Patent Examiner, Art Unit 1734  
7/10/2011